

WHAT IS CLAIMED IS:

1. An information medium which can record together multi-standard data managed in units of files by file management information,

5 wherein integrated management information that integrates and manages mixed reproduction of the multi-standard data can be recorded.

10 2. A medium according to claim 1, wherein the integrated management information is a file managed by the file management information.

15 3. An information medium which has a recording area that can record a plurality of kinds of data coded based on any of no less than two different standards,

the recording area including:

20 a first management information recording area which can record first management information that manages first data coded based on a first standard of the no less than two different standards;

25 a second management information recording area which can record second management information that manages second data coded based on a second standard of the no less than two different standards; and

an integrated management information recording area which can record integrated management information that manages the first management information and second management information together.

4. A medium according to claim 3, further

including an area for storing hierarchical file structure information of data files including an integrated management information file that stores the integrated management information, a first management information file that stores the first management information, and a second management information file that stores the second management information.

5 5. An information medium which has a recording area that can record a plurality of kinds of data coded based on any of no less than three different standards,

10 the recording area including:

15 a first management information recording area which can record first management information that manages first data coded based on a first standard of the no less than three different standards;

20 a second management information recording area which can record second management information that manages second data coded based on a second standard of the no less than three different standards;

25 a third management information recording area which can record third management information that manages third data coded based on a third standard of the no less than three different standards; and

 an integrated management information recording area which can record integrated management information that manages the first management information, second management information, and third management

information together,

the first data being able to contain video
contents,

the second data being able to contain audio
5 contents, and

the third data being able to contain arbitrary
contents.

6. A medium according to claim 5, further
including an area for storing hierarchical file
10 structure information of data files including an
integrated management information file that stores the
integrated management information, a first management
information file that stores the first management
information, a second management information file that
15 stores the second management information, and a third
management information file that stores the third
management information.

7. A data processing method for reproducing
recorded data from an information medium on which
20 multi-standard data managed in units of files by file
management information are recorded together,
comprising:

reading out the file management information from
the information medium;

25 extracting directory information of data files
recorded in the information medium from the readout
file management information, and storing the directory

information;

 checking a file type in specific directory information from the stored directory information; and
 outputting, if it is determined as a result of
5 checking that no less than two different multi-standard data files are present, information indicating that the multi-standard data are recorded together on the information medium.

8. A method according to claim 7, wherein if it
10 is determined as a result of checking that no less than two different multi-standard data files are present, information indicating a mixed combination state of the multi-standard data recorded together on the information medium is output.

15 9. An integrated management information forming method for integrating and managing a reproduction sequence of information reproduced from an information medium on which no less than two kinds of multi-standard contents information managed in units of
20 files by file management information, and contents management information thereof are recorded together, comprising:
 reading out and storing the contents management information from the information medium;

25 acquiring contents management information of each multi-standard contents information from the stored contents management information;

selectively acquiring reproduction unit information indicating an arbitrary reproduction period of each multi-standard contents information from the acquired contents management information; and

- 5 forming integrated management information that integrates and manages mixed reproduction of the multi-standard contents information by combining and registering the selectively acquired reproduction unit information of the multi-standard contents information
10 in an arbitrary reproduction order.

10. An integrated management information saving method for integrating and managing a reproduction sequence of information reproduced from an information medium on which no less than two kinds of
15 multi-standard contents information managed in units of files by file management information, and contents management information thereof are recorded together, comprising:

20 reading out and storing the contents management information from the information medium;

acquiring contents management information of each multi-standard contents information from the stored contents management information;

- 25 selectively acquiring reproduction unit information indicating an arbitrary reproduction period of each multi-standard contents information from the acquired contents management information;

forming integrated management information that
integrates and manages mixed reproduction of the
multi-standard contents information by combining and
registering the selectively acquired reproduction unit
information of the multi-standard contents information
in an arbitrary reproduction order; and
saving the formed integrated management
information in a predetermined information storage unit.

11. An information access method, which uses
integrated management information, and integrates and
manages a reproduction sequence of information
reproduced from an information medium on which no less
than two kinds of multi-standard contents information
managed in units of files by file management
information, and contents management information
thereof are recorded together, comprising:

reading out and storing the contents management
information from the information medium;
acquiring contents management information of each
multi-standard contents information from the stored
contents management information;

selectively acquiring reproduction unit
information indicating an arbitrary reproduction period
of each multi-standard contents information from the
acquired contents management information;

forming integrated management information that
integrates and manages mixed reproduction of

the multi-standard contents information by combining
and registering the selectively acquired reproduction
unit information of the multi-standard contents
information in an arbitrary reproduction order; and

5 accessing each multi-standard contents information
in accordance with the reproduction order registered in
the integrated management information.

12. An integrated management information recording
method for recording information on an information
10 medium on which no less than two kinds of
multi-standard contents information managed in units of
files by file management information, and contents
management information thereof are recorded together,
comprising:

15 reading out and storing the contents management
information from the information medium;

 acquiring contents management information of each
multi-standard contents information from the stored
contents management information;

20 selectively acquiring reproduction unit
information indicating an arbitrary reproduction period
of each multi-standard contents information from the
acquired contents management information;

25 forming integrated management information that
integrates and manages mixed reproduction of the
multi-standard contents information by combining and
registering the selectively acquired reproduction unit

information of the multi-standard contents information
in an arbitrary reproduction order; and
recording the formed integrated management
information on the information medium.

5 13. A method according to claim 12, wherein the
integrated management information is recorded as a file
managed by the file management information.

10 14. A reproduction method for reproducing
mixed-recorded contents information from an information
medium on which no less than two kinds of
multi-standard contents information managed in units of
files by file management information, and contents
management information thereof are recorded together,
and integrated management information that integrates
15 and manages a reproduction sequence of these pieces of
mixed-recorded contents information is recorded as
a file, comprising:
 acquiring the integrated management information
 from the information medium;

20 reading out reproduction unit information of
a standard to be accessed by extracting reproduction
unit information indicating an arbitrary reproduction
period of each multi-standard contents information in
turn from the acquired integrated management
25 information; and

 reading out the contents information corresponding
to the standard to be accessed from the information

medium in accordance with the readout reproduction unit information of the standard to be accessed.

15. A method according to claim 14, wherein when the readout reproduction unit information of the standard to be accessed is reproduction unit information of a reproduction incompatible standard, an access process to contents information corresponding to the reproduction unit information of the reproduction incompatible standard is skipped.

10 16. A reproduction apparatus for reproducing recorded data from an information medium on which multi-standard data managed in units of files by file management information are recorded together, comprising:

15 a read-out section configured to read out the file management information from the information medium;

 a storage section configured to extract directory information of data files recorded in the information medium from the file management information read out by said read-out section, and storing the directory information;

 a checking section configured to check a file type in specific directory information from the directory information stored in said storage section; and

25 output section configured to, if it is determined as a result of checking of said checking section that no less than two different multi-standard data files

are present, output information indicating that the multi-standard data are recorded together on the information medium.

17. An apparatus according to claim 16, wherein if
5 it is determined as a result of checking of said
checking section that no less than two different
multi-standard data files are present, said output
section displays information indicating a mixed
combination state of the multi-standard data recorded
10 together on the information medium.

18. An information forming apparatus for
integrating and managing a reproduction sequence of
information reproduced from an information medium on
which no less than two kinds of multi-standard contents
15 information managed in units of files by file
management information, and contents management
information thereof are recorded together, comprising:
the information medium;

20 a read-out/storage section configured to read out
and storing the contents management information from
the information medium;

25 an acquisition section configured to acquire
contents management information of each multi-standard
contents information from the contents management
information stored in said read-out/storage section;

a selective acquisition section configured to
selectively acquire reproduction unit information
indicating an arbitrary reproduction period of each

multi-standard contents information from the contents management information acquired by said acquisition section; and

a forming section configured to form integrated
5 management information that integrates and manages mixed reproduction of the multi-standard contents information by combining and registering the reproduction unit information of the multi-standard contents information selectively acquired by said
10 selective acquisition section in an arbitrary reproduction order.

19. An information saving apparatus for integrating and managing a reproduction sequence of information reproduced from an information medium on which no less than two kinds of multi-standard contents information managed in units of files by file management information, and contents management information thereof are recorded together, comprising:
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a read-out/storage section configured to read out and storing the contents management information from the information medium;

20 an acquisition section configured to acquire contents management information of each multi-standard contents information from the contents management information stored in said read-out/storage section;

25 a selective acquisition section configured to selectively acquire reproduction unit information

indicating an arbitrary reproduction period of each multi-standard contents information from the contents management information acquired by said acquisition section;

- 5 a forming section configured to form integrated management information that integrates and manages mixed reproduction of the multi-standard contents information by combining and registering the reproduction unit information of the multi-standard 10 contents information selectively acquired by said selective acquisition section in an arbitrary reproduction order; and
- 15 a saving section configured to save the formed integrated management information in a predetermined information storage unit.

20. An information access apparatus, which uses integrated management information, and integrates and manages a reproduction sequence of information reproduced from an information medium on which no less than two kinds of multi-standard contents information 20 managed in units of files by file management information, and contents management information thereof are recorded together, comprising:

- 25 a read-out/storage section configured to read out and storing the contents management information from the information medium;
- an acquisition section configured to acquire

contents management information of each multi-standard contents information from the contents management information stored in said read-out/storage section;

5 a selective acquisition section configured to selectively acquire reproduction unit information indicating an arbitrary reproduction period of each multi-standard contents information from the contents management information acquired by said acquisition section;

10 a forming section configured to form integrated management information that integrates and manages mixed reproduction of the multi-standard contents information by combining and registering the reproduction unit information of the multi-standard contents information selectively acquired by said selective acquisition section in an arbitrary reproduction order; and

15 an access section configured to access each multi-standard contents information in accordance with the reproduction order registered in the integrated management information formed by said forming section.

20 21. An information recording apparatus for recording information on an information medium on which no less than two kinds of multi-standard contents information managed in units of files by file management information, and contents management information thereof are recorded together, comprising:

a read-out section configured to read out and storing the contents management information from the information medium;

5 an acquisition section configured to acquire contents management information of each multi-standard contents information from the contents management information read out by said read-out section;

10 a selective acquisition section configured to selectively acquire reproduction unit information indicating an arbitrary reproduction period of each multi-standard contents information from the contents management information acquired by said acquisition section;

15 a forming section configured to form integrated management information that integrates and manages mixed reproduction of the multi-standard contents information by combining and registering the reproduction unit information of the multi-standard contents information selectively acquired by said selective acquisition section in an arbitrary reproduction order; and

20 a recording section configured to record the integrated management information formed by said forming section on the information medium.

25 22. An apparatus according to claim 21, wherein the integrated management information is recorded as a file managed by the file management information.

23. A reproduction apparatus for reproducing mixed-recorded contents information from an information medium on which no less than two kinds of multi-standard contents information managed in units of files by file management information, and contents management information thereof are recorded together, and integrated management information that integrates and manages a reproduction sequence of these pieces of mixed-recorded contents information is recorded as a file, comprising:

an acquisition section configured to acquire the integrated management information from the information medium;

a reproduction unit information read-out section configured to read out reproduction unit information of a standard to be accessed by extracting reproduction unit information indicating an arbitrary reproduction period of each multi-standard contents information in turn from the integrated management information acquired by said acquisition section; and

a contents information read-out section configured to read out the contents information corresponding to the standard to be accessed from the information medium in accordance with the reproduction unit information of the standard to be accessed read out by said reproduction unit information read-out section.

24. An apparatus according to claim 23, further

- comprising a section configured to, when the readout
reproduction unit information of the standard to be
accessed is reproduction unit information of a
reproduction incompatible standard, skip an access
process to contents information corresponding to the
reproduction unit information of the reproduction
incompatible standard.
- 5